# THE MIGRANT

A QUARTERLY JOURNAL
DEVOTED TO TENNESSEE BIRDS

PUBLISHED BY
THE TENNESSEE
ORNITHOLOGICAL
SOCIETY

DECEMBER 1998
VOL. 69, NO. 4

# THE MIGRANT

A QUARTERLY JOURNAL OF ORNITHOLOGY

PUBLISHED BY

THE TENNESSEE ORNITHOLOGICAL SOCIETY

The T.O.S. is a non-profit, educational, scientific, and conservation organization.


## CURRENT DIRECTORY

(Revised December 1999)

## EDITORIAL STAFF


Editor: J. Devereux Joslin, Jr., 112 Newcrest Lane, Oak Ridge, TN 37830 <jdjoslin@esper.com>

Assistant Editor: Charles P. Nicholson, Box 402, Norris, TN 37828 <cpn@vic.com>

State Count Compiler: Christopher J. Welsh, 5337 Hickory Hollow Rd., Knoxville, TN 37919 <cwelsh@utk.edu>

Season Editor: Richard L. Knight, 804 North Hills Dr., Johnson City, TN 37604 <rKnight@preferred.com>

Regional Season Editors:

Western Coastal Plain: Martha G. Waldron, 1626 Yorkshire Dr., Memphis, TN 38119 <waldron@ten-nash.ten.k12.tn.us>

Highland Rim and Basin: Francis C. Fekel, 8612 Sawyer Brown Rd., Nashville, TN 37221 <fekel@coe.tnstate.edu>

Eastern Ridge and Valley: Richard L. Knight, 804 N. Hills Rd., Johnson City, TN 37604 <rKnight@preferred.com>

Eastern Mountain: Richard P. Lewis, 407 V.I. Ranch Rd., Bristol, TN 37620 <vir@tricon.net>

Editorial Assistants:

Angela Wampler, 295 Essex Dr., Bluff City, TN 37618 <wampler@sprynet.com>

Richard P. and Amanda Lewis, 407 V.I. Ranch Rd., Bristol, TN 37620 <vir@tricon.net>


## OFFICERS FOR 1999-2001


President: Chris A. Sloan, 512 Old Hickory Blvd., Apt. 1203, Nashville, TN 37209 <chris.sloan@home.com>

Vice Presidents: East Tenn. - Ronald D. Hoff, 282 Hackworth Lane, Clinton, TN 37716
Middle Tenn. - Hazel K. Cassel, 491 Hogan Rd., Nashville, TN 37220
West Tenn. - Dick D. Preston, 261 Sassafras Cir., Munford, TN 38549

Directors-at-Large: East Tenn.: David Hassler, 1455 Hassler Rd., Byrdstown, TN 38549
Middle Tenn.: Morris D. Williams, Rt. 5, Box 167, Lawrenceburg, TN 38464
West Tenn.: Donna Ward, 220 Georgia Ave., McKenzie, TN 38201

Secretary: O. Knox Martin, 1176 Dearing Rd., Memphis, TN 38117-6148

Treasurer: David J. Trently, 1029 Morrow Rd., Knoxville, TN 37923

Curator: Charles P. Nicholson, Box 402, Norris, TN 37828

Associate Curator: N.P. McWhirter, III, 4962 Gwynne Rd., Memphis, TN 38117



*Tennessee Warbler* (TOS Newsletter) Editor: Theresa M. Graham, P.O. Box 366, Oakland, TN 38060, (901) 465-4263, Fax (901) 748-9200 <2graham@bellsouth.net>

The TOS website can be found at: www.tnbirds.org

Send subscriptions & address changes to:

Tennessee Ornithological Society, Box 10452, Knoxville, TN 37939-0452

Printed by: Russell Printing Options, 1800 Grand Ave., Knoxville, TN 37916



Copyright © 2000 by the Tennessee Ornithological Society — ISSN 0026-3575575

# THE MIGRANT

Published by the Tennessee Ornithological Society
to Record and Encourage the Study of Birds in Tennessee.
Issued in March, June, September, and December.

VOL. 69 December 1998 NO. 4

*The Migrant*, 69 (4) 171-175, 1998.

## NOTES ON THE FOOD HABITS OF THE BARN OWL IN MIDDLE AND WEST TENNESSEE

PAUL W. PARMALEE
Frank H. McClung Museum
University of Tennessee, Knoxville, TN 37996

Because of the nearly cosmopolitan distribution of the Barn Owl and its typically close association with human habitation sites, a great number of studies have been undertaken and published on the bird's life history, and especially on its food habits (e.g., Bunn et al. 1982 and Burton 1973). Johnsgard (1988: 100-101) has summarized the results of numerous such studies by stating that "these studies collectively indicate that the species has no innate food preferences, but rather feeds on those animals that are small enough to be easily killed and are susceptible to predation by their ecologies, periodicities of activities, and the like, namely those occurring in open habitats during nighttime hours. These are mainly rodents, especially microtine rodents such as voles (*Cricetidae*, especially *Microtus spp.*), with shrews (*Soricidae*) most commonly serving as a secondary group of prey."

This study involved the identification and analyses of prey remains from roost and/or nest sites in three widely separated localities. The first site, a roost, consisted of an empty equipment shed and adjacent silo located on an abandoned dairy farm about 9.6 km northeast of McMinnville, Warren County. Large expanses of ungrazed upland pastureland surrounding the shed and other out buildings provided excellent foraging for the owl(s). The second site, a barn serving as a roost and possible nest site, was located about 9.6 km southwest of La Grange, Fayette County, on what is now known as the Wolf River Wildlife Management Area. The barn (recently destroyed by fire) was located approximately 3.2 km south of the Wolf River and surrounded by low grassland acreage and extensive areas of marshland. A cotton gin adjacent to State Highway 78, 11.2 km south of Tiptonville, Lake County, the third site from which pellets were obtained, has served as a roost and nesting site for Barn Owls for several years.

The number of prey animals represented in any given pellet varies considerably within a particular sample. On occasion a pellet may consist only of tightly packed

fur, possibly residue after a larger pellet containing bone as well as hair or feathers has been regurgitated. Identification of prey animals represented in pellets from these three sites was made using comparative osteological specimens housed in the Zooarchaeology Section, Department of Anthropology, and the McClung Museum, University of Tennessee, Knoxville. In the case of mammals, the number of individuals and taxa represented in each pellet were based on skulls and/or lower jaws. The one exception was the eastern cottontail; remains of this animal (all juveniles) consisted almost entirely of postcranial elements. Genus and species identification of birds was based on elements considered to be diagnostic to those taxonomic levels, particularly the skull, humerus, coracoid and tarsometatarsus. It should be pointed out here that with additional analysis time — a great deal of time — it may be possible to separate the extremely close (osteologically) prairie vole (*Microtus ochrogaster*) from the pine vole (*Microtus pinetorum*); the former appears to be dominant in the samples. In addition to deer and white-footed mice (*Peromyscus maniculatus* and *P. leucopus*, respectively), the cotton mouse (*P. gossypinus*) which is most often associated with swampy woodlands, and the golden mouse (*Ochrotomys nuttalli*), which typically inhabits brushy thickets, possibly may be represented in the pellet samples.

Out of the three sites, the tiny eastern harvest mouse, an inhabitant of abandoned grassy fields and pasture, was represented in the greatest numbers (122 individuals, 10 percent of the sample) in the series of pellets from the Fayette County site. As expected, the marsh rice rat was well represented in pellet samples from sites located in close proximity to low-lying marshy or swampy areas such as those found in outlying regions of the Wolf River and Tiptonville sites. Although captured occasionally — or rarely in the case of the eastern mole (Fayette County site) or juvenile opossum (Knox County roost: Parmalee and Klippel [1991]) — the southeastern shrew, meadow jumping mouse, Norway rat, and juvenile eastern cottontails provide only a small amount of food in the overall diet of the Barn Owl in Tennessee.

Parmalee and Klippel (1991) provide data on seasonal variation in prey of the Barn Owl in Tennessee. In comparing their findings with the list of prey animals from the Warren, Fayette and Lake county sites presented here (Table 1), it is of interest to note that the percentage of voles (*Microtus* spp.), usually the dominant prey species occurring in a series of pellets, varied greatly among sites. At the Warren County site, for example, voles comprised 66 percent of the owl's prey, a percentage identical to that of a Barn Owl nest site in Bartlett, Shelby County (Parmalee and Klippel 1991). In contrast, these rodents comprised only about 25 percent of the prey taken by the Fayette County owls; at this site there appeared to have been greater numbers of shrews (25 percent) and the hispid cotton rat (22 percent) available in the areas hunted.

**Table 1.** Prey species and their frequency identified from a series of Barn Owl pellets obtained from three roost/nest sites in Middle and West Tennessee. A = Number of Individuals; B = Percentage of Total.

Approximate number of pellets examined in parentheses below county name.

| | Warren Co. (188) | | Fayette Co. (452) | | Lake Co. (225)) | |
|---|---|---|---|---|---|---|
| | A | B | A | B | A | B |
| **MAMMALS** | | | | | | |
| Southeastern Shrew, *Sorex longirostris* | 1 | <1 | 4 | <1 | — | — |
| Short-tailed Shrew, *Blarina carolinensis* | 37 | 7 | 163 | 14 | 30 | 6 |
| Least Shrew, *Cryptotis parva* | 58 | 11 | 143 | 12 | 35 | 7 |
| Eastern Mole, *Scalopus aquaticus* | — | — | 1 | <1 | — | — |
| Eastern Cottontail, *Sylvilagus floridanus* | 3 | <1 | 14 | 1 | 5 | 1 |
| Marsh Rice Rat, *Oryzomys palustris* | — | — | 73 | 6 | 51 | 10 |
| Hispid Cotton Rat, *Sigmodon hispidus* | 26 | 5 | 264 | 22 | 2 | <1 |
| Eastern Harvest Mouse, *Reithrodontomys humulis* | 47 | 9 | 122 | 10 | 14 | 3 |
| White-footed/Deer Mice, *Peromyscus* spp. | 1 | <1 | 65 | 5 | 94 | 18 |
| Prairie/Pine Vole, *Microtus* spp. | 360 | 66 | 295 | 24 | 226 | 44 |
| Meadow Jumping Mouse, *Zapus hudsonius* | 2 | <1 | 16 | 1 | 1 | <1 |
| Norway Rat, *Rattus norvegicus* | — | — | — | — | 2 | <1 |
| House Mouse, *Mus musculus* | 8 | 1 | 45 | 4 | 52 | 10 |
| **TOTALS** | **543** | **100** | **1,205** | **100** | **512** | **100** |

| | Warren Co. | Fayette Co. | Lake Co. |
|---|---|---|---|
| | A | A | A |
| **BIRDS** | | | |
| Northern Bobwhite, *Colinus virginianus* | — | 1 | — |
| Sora, *Porzana carolina* | — | 1 | — |
| Barn Swallow, *Hirundo rustica* | — | 1 | 1 |
| European Starling, *Sturnus vulgaris* | — | — | 4 |
| Waterthrush sp., *Seiurus* sp. | — | 1 | — |
| Field Sparrow, *Spizella pusilla* | 1 | — | — |
| Song Sparrow, *Melospiza melodia* | 2 | 1 | — |
| Swamp Sparrow, *Melospiza georgiana* | 1 | 1 | — |
| Dark-eyed Junco, *Junco hyemalis* | — | 1 | — |
| Indigo Bunting, *Passerina cyanea* | — | 1 | — |
| Red-winged Blackbird, *Agelaius phoeniceus* | — | 7 | 17 |
| Meadowlark sp., *Sturnella* sp. | — | 1 | — |
| Common Grackle, *Quiscalus quiscula* | — | — | 1 |
| Brown-headed Cowbird, *Molothrus ater* | — | — | 1 |
| House Finch, *Carpodacus mexicanus* | — | — | 1 |
| Passerine, gen. & sp. undetermined | — | 1 | 9 |
| **TOTALS** | **4** | **17** | **34** |
| **AMPHIBIANS** | | | |
| Frog, *Rana* sp. | — | 1 | 3 |

It is surprising that the relatively common white-footed and deer mice (*Peromyscus* spp.) were not represented in greater numbers in the pellets examined from Barn Owl roost/nest sites in Tennessee. Except for the Lake County site, in none of the series of pellets examined by Parmalee and Klippel (1991) and in those from the Fayette and Warren county sites did *Peromyscus* comprise more than six percent of the totals. Slightly over 18 percent of the prey species identified from the cotton gin nest/roost site, Lake County, consisted of deer/white-footed mice. Rodents, especially, are often attracted to human habitation sites surrounded by fallow fields, woodlots and even marshland, when an easily accessible food supply is present. This may account for the relatively high number of individuals of *Peromyscus* (94) in the Lake County pellet sample. Certainly the cotton gin, like most outbuildings on farms, provided preferred habitat for the house mouse; it accounted for approximately 10 percent of the mammalian prey at the Lake County site.

It has been suggested that the success of a night's hunt is reflected in the number and/or size of the prey represented in a large "typical" pellet. Burton (1973:194) states that "small pellets are formed and regurgitated at night while the bird is hunting and larger second pellets are later deposited at the day-time roost or nesting site, which is often in a farm barn, disused or derelict building, haystack or hedgerow tree." In the case of mammals, it is not uncommon to find the remains of as many as three or four prey species, representing seven or eight individuals, in a single pellet. To cite just three examples: A pellet from the Warren County site contained 1 short-tailed shrew, 2 voles, 4 eastern harvest mice and 1 house mouse; a pellet from the Fayette County site - 1 least shrew, 1 marsh rice rat, 3 house mice, and 3 voles; a pellet from the Lake County site - 1 short-tailed shrew, 1 marsh rice rat, 4 deer/white-footed mice, and 2 voles.

Although the Barn Owl appears to be less opportunistic than, for example, the Great Horned Owl (*Bubo virginianus*) in the selection of prey, food habit studies have shown that Barn Owls will take a variety of animals including insects, crayfish, amphibians, reptiles and even fish in addition to their usual prey of small rodents, shrews and birds. (Andrews 1990; Burton 1973). The diversity of prey recorded from the Warren, Fayette and Lake County sites included 15 species of birds (see Table 1). In addition, about 10 other bird species — most, if not all, passerines — were represented, but because of broken or non-diagnostic element(s) they could not be identified. Birds constituted from less than 1.0 percent of the total number of prey animals at the Warren County site and 1.4 percent at the Fayette County site, to 6.2 percent at the Lake County site.

The diversity of bird species preyed upon by Barn Owls from these three sites is not great. However, it is apparent that a gregarious species such as the Red-winged Blackbird, which may occur in considerable numbers in wetland areas (for example, near the Fayette and Lake county sites) during roosting and/or nesting periods, may provide an easily obtainable source of food for owls. Predation by Barn Owls on other species of birds that occur singly or in small flocks (e.g. native sparrows,

Dark-eyed Junco, Indigo Bunting, Eastern Meadowlark) in abandoned fields and ecotone areas would seem to be of a more fortuitous occurrence.

Identification of the contents of approximately 865 pellets recovered from roost/nest sites in Warren, Fayette and Lake counties has shown that prey species taken by Barn Owls in Middle and West Tennessee tend to coincide with those comprising the diet of this owl in other parts of its range in North America. The number of prey individuals for the three sites combined totalled 2,260 mammals, 55 birds and 4 frogs. Obviously there will be some variation in the diversity of prey animals taken by these owls from site to site, but in general small rodents (especially voles), shrews, and, to a lesser extent birds, head the list of animals consumed by the Barn Owl in Tennessee.

## ACKNOWLEDGEMENTS

I would like to thank most sincerely Susan N. McWhirter and Martha Waldron, both of Memphis, for their interest in this study and for collecting samples of pellets periodically during the past several years. I am grateful to Richard Preston, Munford, for obtaining several pellet samples from the Lake County site. Special appreciation is extended to Betty W. Creech, McClung Museum secretary, for typing drafts of the manuscript. I would also like to thank J.D. Joslin, Jr. and the three outside reviewers for their editorial comments and suggestions for improving the manuscript.

## LITERATURE CITED

ANDREWS, P. 1990. *Owls, Caves and Fossils*. University of Chicago Press, Chicago, Illinois.

BUNN, D.S., A.B. WARBURTON and R.D.S. WILSON. 1982. *The Barn Owl*. Buteo Books, Vermillion, SD.

BURTON, J.A. (EDITOR). 1973. *Owls of the World*. E.P. Dutton, NY.

JOHNSGARD, P.A. 1988. *North American Owls*. Smithsonian Institution Press, Washington, D.C.

PARMALEE, P.W. and W.E. KLIPPEL. 1991. Seasonal variation in prey of the Barn Owl (*Tyto alba*) in Tennessee. *J. Tenn. Acad. Sci.* 66(4):219-224.

*The Migrant*, 69 (4): 176-178, 1998.

# GREAT BLUE HERON COLONY STATUS AND NEST SITE CHARACTERISTICS AT SINKING POND, TENNESSEE

BRIAN D. CARVER, JOHN W. LAMB, LAURA JENNINGS, RYLAND MOORE, and GEOFF WEST
1100 Kindel Drive, Arnold Air Force Base, TN 37389

## INTRODUCTION

The Great Blue Heron (*Ardea herodias*) received Tennessee state listing as "In Need of Management" in 1974. The Tennessee Wildlife Resources Agency delisted the species from that status in 1990 due to increases in numbers (Bob Hatcher, TWRA pers. com., 1998). The Great Blue Heron colony located at Sinking Pond, a 400-acre seasonally flooded, forested wetland, is one of the largest in Tennessee. Sinking Pond, a National Natural Landmark, is located on Arnold Air Force Base in Coffee County, Tennessee (35° 25' 04" N, 86° 03' 32" W). This site is the only example on Arnold Air Force Base of the "critically imperiled globally" overcup oak/river birch/ resurrection fern forest community type (Pyne et al. 1998).

Due to the Great Blue Heron's position as a top predator in wetland habitats, it can serve as a biological indicator species for the health of wetland ecosystems (Pullin 1990). This colony enjoys protection from human disturbance and habitat destruction, two major causes of the specie's declines in the late 1960s and early 1970s (Short and Cooper, 1985). Carlson and McLean (1996) noted that repeated human intrusions to the nesting area, particularly during the early stages of breeding, may lead to nesting failure or colony abandonment. The Sinking Pond colony was first censused in 1965 by Dubke who found 25 active nests and, previous to 1998, the last census was conducted in 1988 by Pullin who found 227 active nests (Pullin 1990). This paper presents results of an additional census conducted in 1998.

## METHODS

Methods used for this census follow those developed for and used at this site by Pullin (1980). This census was conducted on 15-18 June 1998. The census was conducted by two groups of observers. Canoes were used in order to facilitate quiet travel through the rookery to reduce disturbance to nesting birds. The following parameters were documented for each nest site when conducting the survey:

1. Tree tag number placed on each nest tree and year recorded.
2. Tree species.
3. Condition of nest tree.
4. Number of nests (active or inactive). Nests were designated as active based on the presence of nestlings, fledglings, or significant concentrations of guano within or below nests.
5. The position of the nest relative to the trunk was recorded using a compass.
6. Nest location (proximal/ distal) — Distance from the tree trunk was recorded as proximal (< 1.0 meter from the main trunk) or distal (> 1.0 meter from the main trunk).
7. Branch support for each nest was identified as either a heavy limb (diameter > 10.0 cm), moderate limb (5.0 < diameter < 10.0 cm), or light limb (diameter < 5.0 cm).

## RESULTS AND DISCUSSION

The rookery at Sinking Pond has been surveyed on several occasions and has been steadily increasing in size. Numbers of active nests increased from 18 in 1977 to 227 in 1988 (Pullin 1990). We located a total of 319 trees containing Great Blue Heron nests. Eight hundred fifty-six nests were counted; 743 were active and 113 were inactive. The number of nests per tree tagged ranged from 1 to 9 with an average of 2.6. A marked increase in number of active nests from Pullin's 1988 census has occurred.

Pullin (1980) did not give data on the species of nest trees but did note that the pond was dominated by willow oak and red maple. We found the most common nest tree used was overcup oak which is the dominant tree in Sinking Pond (Table 1). The most common nest position relative to the tree trunk was North but the nest positions were fairly evenly distributed (Table 1). The majority of nests were located distally relative to the tree trunk (> 1.0 meter from the main trunk) and the most common size of branch support for nests was moderate (5.0 < diameter < 10.0 cm) (Table 1). Of the 319 trees used by the herons for nesting, only 2 were dead, while the majority of the trees appeared to be in good condition.

**Table 1.** Selected Parameters of Great Blue Heron Nests.

| **Nest Tree Species** | **# of Trees** | **% by Species** |
|---|---|---|
| Overcup Oak (*Quercus lyrata*) | 250 | 79% |
| Red Maple (*Acer rubrum*) | 4 | 1% |
| Sweetgum (*Liquidambar straciflua*) | 58 | 18% |
| Willow Oak (*Quercus phellos*) | 7 | 2% |
| **Position of Nest Relative to Trunk** | **# of Nests** | **% of Nests** |
| North | 174 | 20% |
| Northeast | 88 | 10% |
| East | 69 | 8% |
| Southeast | 76 | 9% |
| South | 146 | 17% |
| Southwest | 82 | 10% |
| West | 114 | 13% |
| Northwest | 107 | 13% |
| **Distance from Trunk** | **# of Nests** | **% of Nests** |
| Proximal (< 1.0 meter from main trunk) | 101 | 12% |
| Distal (≥ 1.0 meter from main trunk) | 756 | 88% |
| **Size of Nest Limb** | **# of Nests** | **% of Nests** |
| Heavy Limb (diameter >10.0 cm) | 362 | 42% |
| Moderate Limb (5.0≤ diameter ≤10.0 cm) | 489 | 57% |
| Light Limb (diameter <5.0 cm) | 8 | 1% |

Results of the parameters measured showed a divergence from those documented by Pullin (1980). While Pullin found heavy limbs to be used most frequently, this census found moderate limbs to be used more for nest support. Pullin noted that 60% of all nests were proximal in location while our survey found 88% of all nests to be located distally from the main trunk (Table 1). Perhaps the most striking difference in the findings of these two studies involves the position of the nest relative to the main tree trunk of the nest tree. Pullin found "over one-third of nests to be oriented on the southwest side of trees" and attributed this to the thermoregulatory benefits of direct sunlight. This study found only 10% of nests oriented in this direction with the most common position being North at 20%. Differences in the findings of these two studies that were conducted using the same methods may be attributed largely to sample size. While Pullin had a sample size of only 31 nests, the findings of this study are based on a sample size of 856 nests.

The large increase in the number of active nests at Sinking Pond over a 10 year period illustrates how rapidly changes can occur in the population size of a Great Blue Heron colony. Whether the population of herons in the region and the colony size at Sinking Pond is continuing to grow or has reached its carrying capacity is unclear at this time and more data will be needed to answer this question. Due to the size of the colony and the difficulty in locating nests because of the dense canopy, a complete survey is a time-consuming process. It is recommended that these protocols be repeated at two-year intervals to monitor the colony status while reducing disturbance from monitoring activities.

## ACKNOWLEDGEMENTS

We thank the Air Force for its continued support towards the conservation of Department of Defense lands. We also thank Geoff Call, AAFB Conservation Biologist, for extensive review of the first draft of this document.

## LITERATURE CITED

CARLSON, B.A. and E.B. MCLEAN. 1996. Buffer zones and disturbance types as predictors of fledging success in Great Blue Herons, *Ardea herodias*. *Colonial Waterbirds* 19(1): 124-127.

PULLIN, P.P. 1980. *Nest Distribution of the Sinking Pond Colony.* A report to the Tennessee Valley Authority.

PULLIN, P.P. 1990. Size and trends of wading bird populations in Tennessee during 1977-1988. *Migrant* 61(4): 95-104.

PYNE, M., M.J. RUSSO, C.S. MAJOR, S. ROLLINS, and D. CAMPBELL. 1998. *Preliminary Community Classification for Arnold Air Force Base, Tennessee* (version of May 28, 1998). The Nature Conservancy, Tennessee Field Office, Nashville. 14 pp.

SHORT, H.L. and R.J. COOPER. 1985. *Habitat Suitability Index Models: Great Blue Heron.* U.S. Fish and Wildl. Serv. Biol. Rep. 82(10.99). 23 pp.

*The Migrant*, 69 (4): 179-181, 1998.

# OBSERVATIONS ON THE RELATIONSHIP BETWEEN THE COMMON RAVEN AND THE PEREGRINE FALCON

ALLAN J. TRENTLY
East Tennessee State University
Box 19353, Johnson City, TN 37614

Peregrine Falcons (*Falco peregrinus*) and Common Ravens (*Corvus corax*) nest in very similar habitats. Both species can be found nesting on rock cliffs. In fact, peregrines will utilize old raven nest sites, and ravens will nest at old peregrine sites (Ratcliffe 1997). This has occurred at Peregrine Ridge in the Great Smoky Mountains National Park, Sevier County (Williams 1980; Knight and Hatcher 1997), possibly Doe River Gorge, Carter County (Herndon 1950), and in Madison County, NC (Chris McGrath [CM] personal communication). Although peregrines do not build a nest, they will sometimes lay their eggs in raven nests (Hickey and Anderson 1969; Ratcliffe 1997). In Britain, Ratcliffe (1962) found peregrines nesting in 58 out of 155 raven nests (37%) located. Because ravens can build their own nests, and because they begin nesting before peregrines, they may have the biological advantage when it comes to selecting and nesting at new sites. A raven nest may benefit the peregrine by adding greater incubation capabilities and offering protection for the eggs (Gill 1990).

Ganier (1962) witnessed a Peregrine attack one of a pair of nesting ravens at Devil's Backbone cliff (Peregrine Ridge) in 1960. Peregrines are known or believed to have nested on the cliff from the 1920s through to 1942 (Ganier 1931, 1933, 1962; Stupka 1963) and once again in the 1990s (Knight and Hatcher 1997; Dickenson 1997), and ravens are known or believed to nest from 1944 till the 1980s (Stupka 1963; Williams 1980), but neither have ever been known to nest on the ridge at the same time. Peregrines will sometimes share a nesting cliff with ravens, especially if the two nests are hidden from each other, while at other times ravens are made to desert their nest especially when space is limited (Ratcliffe 1997). Both species have managed to share a cliff in Madison County, NC (CM, pers. comm.).

When these two species occur together, they are frequently in conflict with each other, although the degree of antagonism varies from slight agitation to occasional fatal combat. Most skirmishes end without any contact between the two (Ratcliffe 1997). When there is a fatality, it is usually the raven that succumbs to the peregrine's aggression, but the tables have been turned on occasion. There are at least three instances recorded in the literature in which peregrines were brought down and killed through aerial combat (Ratcliffe 1993, 1997). The raven is good at defending itself against the faster peregrine. Bent (1964) witnessed a raven turn over with its talons to the sky to meet an attacking peregrine near Lexington, VA. The peregrine was diverted by this maneuver. Sometimes the raven is even the aggressor: Latscha (Cramp et al. 1994) witnessed a pair of ravens force a peregrine to drop its prey and then fly off with the stolen food.

Michael Welch watched altercations between two birds at Rocky Fork, Unicoi County on two occasions in 1998 (Welch, pers. comm.). On 23 April, he observed a pair of ravens mob a single peregrine, and then the reverse, as the peregrine repeatedly dive-bombed a raven for about 10 minutes. On 7 June, three ravens, possibly two adults and one juvenile, became quiet when a peregrine appeared briefly. While two peregrines were actually seen at Rocky Fork by Fred Alsop III, Welch, and Pete Wyatt in 1998, one was an adult and the other was a juvenile and so there was limited potential for nesting. If they were an adult pair, would they have taken possession of the raven nest site? No peregrines were seen at Rocky Fork in 1999.

I observed a pair of Common Ravens attacking a single Peregrine Falcon at Grandfather Mountain on 6 May 1999. On a second visit to Grandfather Mountain on 14 June 1999, Jason Osbourne and I witnessed a single raven attack a peregrine. The raven flew fast in its attempt to intercept the peregrine as it flew west towards Linville Peak (1609 m). The raven came from above and plummeted down towards the peregrine's back. The falcon flipped itself over and out of the way averting impact from the speeding raven. The peregrine rose above and took advantage of its new position by dropping down upon the raven. During the whole encounter, which lasted less than 30 seconds, no contact was ever made between the two birds. The peregrine flew to the peak, but then turned around to head back the way it came. Other ravens were present when the attack began, but only one engaged the falcon. Later that day, the peregrine came back to the peak, but this time no raven attacked it. Instead the ravens (there were at least two, possibly as many as four) scattered and kept away from the area for at least 20 minutes.

Ravens were first observed nesting at Devil's Looking Glass, Unicoi County on 11 April 1996 (Lewis 1996). Nesting continued in 1997 (Rick Knight, pers. comm.), 1998 (Trently 1998), and in 1999 (Allan J. Trently, personal observation). On 26 April 1999, I observed an adult Peregrine Falcon perched on the nest cliff plucking what looked like a young raven. In 1998 the ravens fledged in the first week of May (Trently 1998); if the prey were a raven, it would most likely have been a nestling. At one point, the falcon lifted a black wing. The parent ravens were heard calling about 300 m east of the nest, and at one point they were seen flying towards the cliff with two American Crows (*Corvus brachyrhynchus*) chasing them. The birds diverted their direction possibly due to seeing the peregrine still on the cliff. On 27 April, I waited 2.5 hours at Devil's Looking Glass and saw no ravens but one peregrine. On 5 May, one peregrine and no ravens were seen, and on 30 May and 13 June (totaling 1.5 hours) neither species was observed. Ratcliffe (1997) lists eight accounts of Peregrines using raven adults and fledglings as food, but he does not mention nestlings. Heinrich (1999) believed that a large raptor killed and ate the nestlings in a Denali Park, Alaska nest.

## LITERATURE CITED

BENT, A.C. 1964. *Life Histories of North American Jays, Crows, and Titmice, Part I.* U.S. Natl. Mus. Bull. 191.

CRAMP, S. and C.M. PERRINS. (EDS.) 1994. *Handbook of the Birds of Europe, the Middle East, and North Africa. The Birds of the Western Palearctic. Vol. VIII. Crows to Finches.* Oxford University Press, Oxford p. 211.

DICKENSON, D. 1997. Peregrine Falcon growth and behavior from nesting to dispersal stages at a Smoky Mountain eyrie. *Migrant* 68(4): 117-122.

GANIER, A.F. 1931. Nesting of the Duck Hawk in Tennessee. *Wilson Bull.* 43(1): 3-8.

GANIER, A.F. 1933. *Distributional List of the Birds of Tennessee.* TN Dept. of Game and Fish, Nashville, TN.

GANIER, A.F. 1962. Some nesting records from the Smokies. *Migrant* 33(1): 1-6.

GILL, F.B. 1990. *Ornithology.* W. H. Freeman and Company. New York.

HEINRICH, B. 1999. *Mind of the raven: investigations and adventures with wolf-birds.* Harper Collins, New York. p. 182.

HERNDON, L.R. 1950. Birds of Carter County, Tennessee. *Migrant* 20(4): 60.

HICKEY, J.J. and D.W. ANDERSON. 1969. The Peregrine Falcon: life history and population literature. Pp. 3-42 in J. J. Hickey, ed. *Peregrine Falcon populations: their biology and decline.* Univ. Wisconsin Press, Madison.

KNIGHT, R.L. and R.M. HATCHER. 1997. Recovery efforts result in returned nesting of Peregrine Falcons in Tennessee. *Migrant* 68(2): 33-39.

LEWIS, R.C. 1996. Seasonal Report: East Tennessee Region. *Migrant* 67:65.

RATCLIFFE, D.A. 1962. Breeding density in the peregrine (*Falco peregrinus*) and raven (*Corvus corax*). *Ibis* 104(1): 13-39.

RATCLIFFE, D.A. 1993. *The Peregrine Falcon.* 2nd edition. Poyser, London.

RATCLIFFE, D.A. 1997. *The Raven.* Academic Press Inc., San Diego, CA.

STUPKA, A. 1963. *Notes on the Birds of The Great Smoky Mountains National Park.* University of Tennessee Press, Knoxville. TOS (Tennessee Ornithological Society). 1946. Birds listed on three spring field days. *Migrant* 17: 23.

TRENTLY, A.J. 1998. Observations on a Common Raven (*Corvus corax*) nest at Devil's Looking Glass, Unicoi County. *Migrant* 69(3): 126-130.

WILLIAMS, M.D 1980. Notes on the breeding biology and behavior of the ravens of Peregrine Ridge, Great Smoky Mountains National Park, Tennessee. *Migrant* 51(4): 77-80.

*The Migrant*, 69 (4): 182-184, 1998.

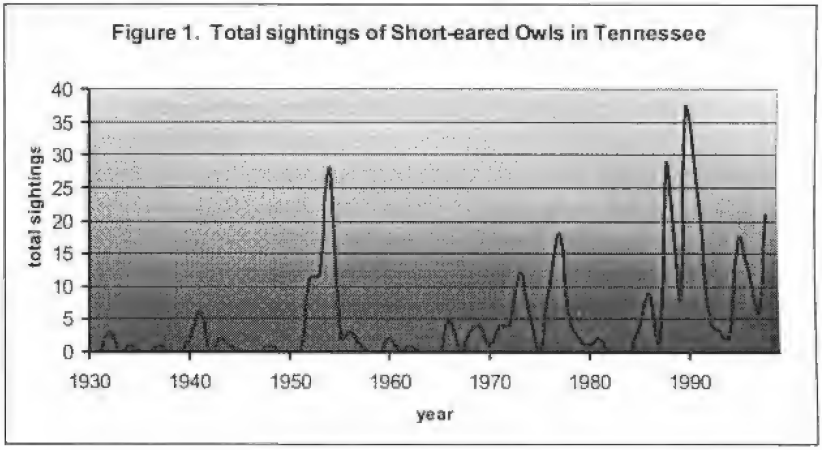
# AN ANALYSIS OF SHORT-EARED OWL SIGHTINGS IN TENNESSEE

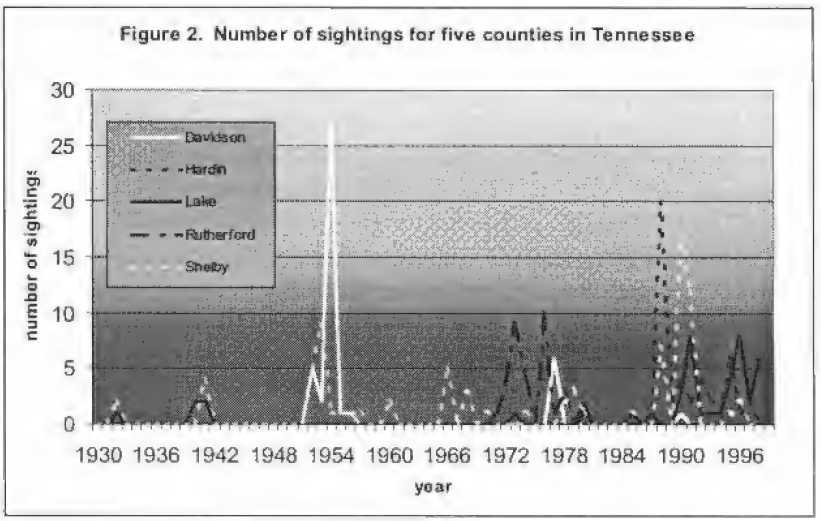
ANNA L. CHARBONNET
1943 Lyndale Avenue, Memphis, TN 38107

The Short-eared Owl (*Asio flammeus*) is a crow-sized owl with long wings and tawny, brown color with heavy streaking (Bull and Farrand 1977; Kaufman 1996). The owl has very short ear tufts, but they are rarely visible, and thus the head usually appears round. It prefers freshwater or salt marshes, open bottomlands along or near rivers, grasslands, even dunes or prairies. Its major prey is small rodents, but it willingly takes small reptiles and birds when it can catch them. Short-eared Owls are most often seen in the late afternoon, hovering or flying above fields; its flight is erratic and bounding. When prey animals are abundant, several birds are often found hunting together in the area where the prey are concentrated. This owl winters all across the southern United States. It is present in Tennessee from about October 30 to April 17. The purpose of this paper is to record the history of sightings of the owl in Tennessee, using information about the sightings taken from *The Migrant*. The sightings include observations reported during field excursions throughout each season, and also the Christmas and Spring Bird Counts performed in this state.

Across Tennessee (see Figure 1), previous to the 1940s, this owl was not often seen or reported. Beginning in the 1950s, it became more common. Although the number of sightings was down briefly in the 1960s and the early part of the 1980s, the number of sightings of birds that overwinter in this area has been generally increasing. The highest numbers ever recorded for this bird were in the late 1980s and early 1990s. Figure 2 depicts the data as numbers of sightings by county. Only the top five counties, Shelby, Davidson, Hardin, Rutherford, and Lake, are shown on this diagram. Of the total sightings in Tennessee, almost all have been in the west or central parts of the state, and these five counties had 73% of the total reported sightings. Davidson County has had relatively few sightings, except for large numbers in certain years, such as in the early to mid-1950s and the late 1970s. Only in the past 10 to 15 years has Hardin County had any reported sightings, and since 1988, the birds have been a rather frequent visitor there. Shelby and Lake Counties have had reported sightings since the 1930s, but the numbers for Shelby County have been consistently higher than those for Lake County. The most sightings for Lake County were in the 1990s. Rutherford County experienced large numbers of sightings from 1971 to 1980.

It is noteworthy that these sightings were gathered over many years by many observers. In dealing with sightings made by many individuals, especially over an extended period of time, it is difficult to judge if the variations in the numbers of sightings truly reflect variations in bird numbers. If there is an increased amount of interest in a particular bird in the area, then it seems likely that more observers will produce more sightings. It is significant that the main counties where sightings of




the owl occurred are also counties in which there are larger concentrations of birdwatchers. Thus, perhaps little is known about the Short-eared Owl in other counties simply because those counties are not being carefully surveyed. Another factor that could have slightly influenced the data is that the collection of the data was performed in an uncontrolled manner. Spring and Christmas bird counts are generally performed in a certain format, but that format has probably changed over the years. There may also have been sightings that that were not reported.

There were no clear, recognizable patterns for some areas. For example, the Reelfoot Lake (Lake County) area did not have any sightings from 1941 to 1971, or from 1973 to 1985. Lake County, aside from those time periods, had fairly consistent numbers of birds from year to year. It is not clear why there is such year to year

variation for the sightings of the owl for this county. Perhaps each individual bird does not return to the same wintering grounds each year, but selects the optimal wintering ground. There were many sightings reported for Davidson, Shelby, and Rutherford counties during the period in which Lake County had few; it is possible that approximately the same numbers of owls come to Tennessee to over-winter, but go to different areas. There are more easily explained temporal variations evident for other areas. For example, the airport in Smyrna, TN, was a popular wintering ground for Short-eared Owls for about 10 years in the 1970s. After 1979, the birds were suddenly no longer seen in the area of the Smyrna airport. The year the owls disappeared was the same year that soybeans were planted in the fields surrounding the airport; the habitat was then less suitable for the owls' prey, and thus the owls moved elsewhere. The sudden appearance of the owl in the Shelby county area, specifically in the Ensley Bottoms area, can be attributed to the new habitat formed by the building of the Earth Complex. This area is a haven for not only birds, but many organisms that prefer marshy habitats; the owls find food plentiful there. Another explanation for the appearance the owl in new areas is that perhaps some individual owls simply discover a new area that is favorable for them, and these birds begin returning to the same spot, bringing others with them. This may have been the case in the bottomland area near Savannah, TN; Short-eared Owls appeared there in the late 1980s, and there have been numerous sightings of them since then. There may also have been environmental changes in the area that made the area more suitable for the owls, similar to the creation of the Earth Complex in Shelby County.

## LITERATURE CITED

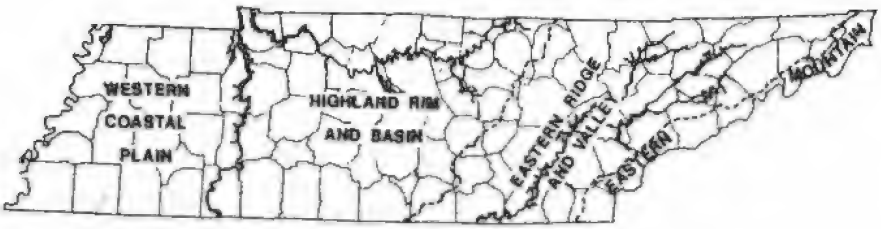
KAUFMAN, KEN. 1996. *Peterson Multimedia Guide: North American Birds*. 4th ed. Houghton Mifflin Interactive, Somerville, MA.

BULL, J. and FARRAND, J. 1977. *The Audubon Society Field Guide to North American Birds*. Alfred A. Knopf, Inc., New York.

*The Migrant*, 69 (4): 185-192, 1998.

# THE SEASON

RICHARD L. KNIGHT, Editor




## SUMMER: 1 JUNE - 31 JULY 1998

Conditions seemed conducive for a successful breeding season, although a rather wet June may have adversely affected some ground-nesters. Highlights in the Western Coastal Plain included nests of Mississippi Kite, King Rail, Barn Owl, and Cedar Waxwing. Numbers of territorial Henslow's Sparrows increased in the Highland Rim and Basin. Bewick's Wren and Lark Sparrow were also reported there. Least Bitterns nested in the Ridge and Valley; Bobolinks probably did, too. Peregrine Falcons again nested in the two eastern regions. Territorial Savannah Sparrows also occurred in the two eastern regions. Other likely breeders in the Eastern Mountains included Hermit Thrush, Vesper Sparrow, Red Crossbill, and Pine Siskin.

Transient shorebirds and dispersing waders were widespread. White Ibis continued to increase in both frequency and numbers, appearing in three regions. A few non-breeding ducks were noted.

*Standard Abbreviations*

| | |
|---|---|
| ad - adult | m - male |
| BBS - Breeding Bird Survey | max - maximum one day count |
| Co - County | m.ob. - many observers |
| ers - earliest reported sighting | Mtn - Mountain |
| f - female | n, e, s, w - compass directions |
| ft - feet | NWR - National Wildlife Refuge |
| im - immature | R - River |
| L - Lake | WMA - Wildlife Management Area |
| lrs - latest reported sighting | yg - young |

WESTERN COASTAL PLAIN REGION — A wet June created wet backroads which limited field work, but a hot and dry July allowed 24 observers to spend numerous days in the field. A confirmed nesting for the Cooper's Hawk and a Cedar Waxwing nest were firsts for Carroll County.

*Grebe-Duck:* **Pied-billed Grebe:** 10 Jun (1 im) Phillipy; 16 Jun/3 Jul (1/1 im) Black Bayou WMA (WGC). **American White Pelican:** 4 Jul into Aug (164 max) Phillipy (WGC, JAZ, LVZ). **Double-crested Cormorant:** (42 max), **Great Blue Heron:** (368+), **Great Egret:** (600+), **Snowy Egret:** (160+), **Little Blue Heron:** (467+) and **Cattle Egret:** (650+) were reported at various locations (WGC, JAZ, LVZ). **Tricolored Heron:** 2 Jun thru Jul (1 ad, 3 im) Whites L. WMA (WGC). **Black-crowned Night-Heron:** 2 Jun thru Jul (20 max) Dyer Co (WGC). **Yellow-crowned Night-Heron:** 7 Jun (1 im) Hatchie NWR (Joe Guinn, RPF); 9 Jun (1) Wolf R. WMA (RPF, SNM, Larry Smith, MGW); 5 Jul (1) sw Shelby Co (MGW). **White Ibis:** 7 Jun (1) Hwy 155, Dyer Co (JAF, SCF); 24 Jun/5 Jul (1 im) Hwy 103 & Great River Rd., Dyer Co (WGC); 8 Jun (1 im) Duck River Unit, Tenn. NWR (Ken Allen), first refuge record. **Gadwall:** 6 Jun thru Jul (2 m, 1 f) Black Bayou WMA (WGC). **American Wigeon:** 16 Jun (1 m) Black Bayou WMA; 5/27 Jul (1 m) Whites L WMA (WGC). **American Black Duck:** 15 Jun (1 m) Dyer Co; 16/21 Jun (1 m) Black Bayou WMA (WGC). **Northern Shoveler:** 16 Jun (1 m) Black Bayou WMA (WGC). **Northern Pintail:** 19 Jul (1 m) Black Bayou WMA (WGC).

*Osprey-Moorhen:* **Osprey:** 24 Jun (9 nests) Reelfoot L (David Hager, OKM). **Mississippi Kite:** 1 Jun thru Jul (5 ad, 3 nests) Shelby Co (LCC, MaH, OKM), plus various single sightings; 1 Jun (1) Hatchie R. & Hwy 100, Hardeman Co (CHB), first Co record; 7 Jun (1) Hatchie NWR (GCP, MGW). **Bald Eagle:** 2 Jun/27 Jul (1 ad) Whites L WMA (WGC); 24 Jun (7 nests, 13 yg) Reelfoot L , plus 1 nest at # 9 L, Tenn/Ky (David Hager, OKM); 26 Jul (1 ad) Eagle L WMA, Shelby Co (VBR), first summer record in Co. **Cooper's Hawk:** 6 Jun (1) Milan Arsenal (RPF); 4 Jul (1) Whites L WMA (WGC). **Peregrine Falcon:** 30 Jun (1) Whites L WMA (WGC). **King Rail:** 30 Jun (1 ad) - 3 Jul (nest w/eggs)/9-15 Jul (nest w/10 eggs) Dyer Co ; 4-31 Jul (1 ad, 3 yg) Black Bayou WMA (WGC). **Virginia Rail:** 1-25 Jun (1) w Fayette Co (Peggy Gaboury). **Common Moorhen:** 18 Jul (2) EARTH Complex (MAG, JRW).

*Plover-Nighthawk:* 23 species of shorebirds were reported at the EARTH Complex by CHB, DDP, GCP, Rob Peeples, VBR, Harry Sayle, Dick Whittington, MGW, JAZ, LVZ, except where noted; 20 species of shorebirds were reported from other Cos; for information regarding species not listed contact the regional compiler. **Piping Plover:** 23/26 Jul (4/2) EARTH Complex. **Black-necked Stilt:** reported from Whites L WMA, Black Bayou WMA, & Sassafras Ridge in nw Tenn & 3 locations in Shelby Co; 26 Jul (64 ad) Shelby Co (LCC, MaH), max. **Ruddy Turnstone:** 2 Jun (2) Dyer Co (WGC). **Sanderling:** 23 Jul (1) EARTH Complex; ? Jul (11) Phillipy (WGC). **Western Sandpiper:** 19/23 Jul (5) Phillipy (WGC); 18 Jul (276) EARTH Complex (MAG, JRW), state high count. **White-rumped Sandpiper:** 6 Jun (5) Whites L WMA (WGC). **Wilson's Phalarope:** 19 Jul (1) Black Bayou WMA (WGC). **Laughing Gull:** 19 Jun (1) Dyer Co (WGC). **Franklin's Gull:** 5-7 Jun (4) Dyer Co (WGC), first Jun record in state. **Forster's Tern:** 30 Jun (1) Lake Co (WGC). **Barn Owl:** 23 Jun (nest, 4 yg) sw Memphis (OKM). **Common Nighthawk:** 1 Jun thru Jul (27 max) downtown Memphis (LCC, MaH).

*Swallow-Bunting:* **Bank Swallow:** 3/9 Jul (800) Phillipy (WGC). **Brown Creeper:** 6 Jun (pair & 1 singing m) Wolf R., n of Rossville, Fayette Co (RPF). **House Wren:** 1 Jun thru Jul (1) Humboldt, Gibson Co (MAG); 24-29 Jun (1) e Memphis (SNM). **Cedar Waxwing:** 15 Jun (on nest) Milan Arsenal (RPF), first confirmed nest in Co. **Ovenbird:** 6 Jun (1) Milan Arsenal (RPF); 12 Jun (1) Wolf R WMA (SNM, MGW). **Scarlet Tanager:** 6 Jun (1) Milan Arsenal (RPF). **Grasshopper Sparrow:** 6 Jun (1) sw of Bolivar, Hardeman Co (DDP); 14 Jun (1) ne of Madie, Lake Co (William Peeples). **Song Sparrow:** 1 Jun thru Jul (6) EARTH Complex; 18 Jul (2) Black Bayou WMA (WGC). **Painted Bunting:** 7 Jun (1 m) e of Cottonwood Grove, Lake Co (JAF, SCF).

*Locations:* Black Bayou WMA - in Lake Co; EARTH Complex - in Shelby Co; Hatchie NWR - in Haywood Co; Milan Arsenal - in Carroll Co; Phillipy - in Lake Co; Reelfoot L - in Lake & Obion Cos; Whites L WMA - in Dyer Co; Wolf R WMA - in Fayette Co.

MARTHA G. WALDRON, 1626 Yorkshire Drive, Memphis, TN 38119.

HIGHLAND RIM AND BASIN REGION — Summer temperatures were near normal in Nashville. Rainfall in June was very heavy, nearly 12 inches, or over three times the average amount. Unfortunately, half of that total occurred in back-to-back days causing some flooding. By contrast, rainfall for July was just a bit under average.

Highlights of the season included White Ibis, Mississippi Kite, American Avocet, Eurasian Collared-Dove, Barn Owl, Bewick's Wren, and Lark and Henslow's Sparrows.

*Grebe-Tern:* **Pied-billed Grebe:** 26 Jun (1) Putnam Co (SJS). **Great Egret:** 7 Jul (43) Hillsboro, Coffee Co (Erma Rogers, Ruth Luckado, Susan Wakeman). **Green Heron:** 3 Jul (3 yg in nest) Radnor L (MLM). **Yellow-crowned Night-Heron:** 10 Jul (2) Green Hills, Nashville (MLB); 30 Jul (1 ad) Old Fort Park, Ruth. Co (TJW). **White Ibis:** 4 Jul (2) Richland Creek, Humphreys Co (Jimmy Parrish). **Mississippi Kite:** 7 Jun (1) Kingston Springs, Cheatham Co (Sabin Thompson). **Northern Harrier:** 27-29 Jun (1 m, 1 f) Ft. Campbell, Montgomery Co (MR), a potential new breeding species in the state. **Sharp-shinned Hawk:** 9 Jul (1 im) Penn. Bend (MLM); mid-late Jul (3 im) Ruth. Co (TJW). **Cooper's Hawk:** 22 Jul (1 im) Cane Creek Park, Putnam Co (SJS), also ad seen carrying food toward unlocated nest in the vicinity during preceeding weeks. **American Coot:** 14 Jun (2) Drake's Creek, Sumner Co (Barbara Harris); 31 Jul (1) Penn. Bend (MLM). **American Avocet:** 22 Jul (1) Cheatham Co (VJS). **Greater Yellowlegs:** 31 Jul (1) Gallatin Steam Plant, Sumner Co (PDC, HKC, JKS). **Lesser Yellowlegs:** 22 Jul (1) Cheatham Co (VJS). **Solitary Sandpiper:** 22 Jul (1) Cheatham Co (VJS). **Spotted Sandpiper:** 6 Jun (1) Radnor L (MLM). **Semipalmated Sandpiper:** 1 Jun (3) Davidson Co (FCF). **Pectoral Sandpiper:** 22 Jul (1) Cheatham Co (VJS). **Wilson's Phalarope:** 24 Jul (1) Ruth. Co (John Walton). **Caspian Tern:** 22 Jul (1) Cheatham Co (VJS). **Black Tern:** 30 Jul (4) Ruth Co (TJW); 31 Jul (2) Gallatin Steam Plant, Sumner Co (PDC, HKC, JKS).

*Dove-Sparrow:* **Eurasian Collared-Dove:** 18 Jul (2) Florence Rd/Mason Pike, Ruth Co (TJW). **Barn Owl:** 9, 20 Jul (1) Shelby Bottoms, Davidson Co (Jeff Sinks, PDC). **Common Nighthawk:** nest found along side of road near Old Hickory L, Davidson Co (Lee Kramer). **Warbling Vireo:** 13 Jun (1) Maury Co (SJS), on Wrigley BBS. **Veery:** 7 Jun (1) Macon Co (JoF), late migrant. **Bewick's Wren:** 23 Jun (1) Wayne Co (RPF); 6 Jun (1) Williamson Co (SJS), found 12th year in last 16 on Peytonville BBS. **Northern Parula:** 2 Jul (1 banded) Radnor L (Portia McMillan). **Palm Warbler:** 7 Jun (1) Macon Co (JoF), late migrant. **American Redstart:** 13 Jun (2) Hickman Co (SJS), scarce on Wrigley BBS. **Chestnut-sided Warbler:** 1 Jun (1) Radnor L (FCF). **Mourning Warbler:** 1 Jun (1) Nashville (MLB), late migrant. **Lark Sparrow:** 23 Jun (4) Wayne Co (RPF). **Henslow's Sparrow:** thru Jun (20+ in 6 fields) Ft Campbell, Montgomery Co (MR). **Baltimore Oriole:** 6 Jun (1) Williamson Co (SJS).

*Locations:* Penn. Bend - Pennington Bend, Davidson Co; Radnor L - in Davidson Co; Ruth. Co - Rutherford Co.

FRANCIS C. FEKEL, 8612 Sawyer Brown Road, Nashville, TN 37221.

CUMBERLAND PLATEAU/RIDGE AND VALLEY REGION — Temperatures were generally seasonal. Rainfall was 2-3 inches above normal in June and up to 2.5 inches deficient in July, varying by location.

Impressive numbers of long-legged waders appeared at Brainerd Levee. It was speculated that the extensive fires in Florida this summer may have caused increased dispersal. Peregrine Falcons nested at Chattanooga for the second consecutive year; two chicks were observed, but only one fledged. Late northbound shorebirds and early southbound ones nearly overlapped. Some good counts of forest passerines were tallied in the northern Cumberlands, including a few high elevation species. Among some interesting grassland bird records reported in the northern valleys was the probable nesting of Bobolinks. This would be just the second breeding record for the state.

*Grebe-Ibis:* **Pied-billed Grebe:** 12 Jun (1) Bra Lev (KAC, Janice Chadwell); 27 Jul (1) Aus Spr (RLK). **Double-crested Cormorant:** 21 Jun (4) Kingsport (RLK); 18 Jul (4) Rkn Bot (KDE); 25 Jul (1) Ktn Stm Pl (DJT). **Least Bittern:** 12 Jun (4 ad, nest w/ 3 eggs) Bra Lev (KAC), max there; 25 Jul (1) Sugar Creek, Meigs Co (DJT, KDE). **Great Egret:** 18 Jul (128) Bra Lev (Barbara McMahan), max; 13 Jul (3) Cherokee L, Jefferson Co portion (KDE); 18 Jul (10+) Rkn Bot (KDE); 25 Jul (2) Aus Spr (RLK). **Snowy Egret:** 18 Jul (8) Bra Lev (Libby Wolfe), max there; 20 Jul into Aug (1) New Mkt (KDE). **Little Blue Heron:** 19 Jul (35) Bra Lev (KAC), max; 27 Jul (4 im) New Mkt (KDE). **Cattle Egret:** 5 Jun/16 Jul (1) Bra Lev (KAC, TLR/Barbara McMahan); 18 Jul (4) Rkn Bot (KDE). **Black-crowned Night-Heron:** 10, 16 Jun/15 Jul (1-2) Kinser Park, Greene Co (DHM). **White Ibis:** 7/19 Jul (1 im/6 im) Bra Lev (KAC), ers/max.

*Duck-Coot:* **Blue-winged Teal:** 5 Jun (6) Bra Lev (KAC, TLR); thru 19 Jun (1 m) New Mkt (KDE). **Hooded Merganser:** 5 Jun (2 f) Bra Lev (KAC, TLR). **Osprey:** 18 Jul (2) Rkn Bot (KDE). **Bald Eagle:** 18 Jul (1 ad, 1 im) Rkn Bot (KDE). **Sharp-shinned**

**Hawk:** 8, 30 Jun, 10 Jul (1) separate Greene Co sites (DHM); 18 Jun (2 ad) Big South Fork (SJS), giving territorial calls. **Cooper's Hawk:** 9, 16 Jun (1) separate Wash. Co sites (RLK); 17 Jun (nest w/ 3 yg & 1 unhatched egg) Aus Spr (RLK, Rachel Riddal), 2 yg banded, the third was a "branchling" that could not be reached; 30 Jun (1) Greene Co (DHM). **Red-shouldered Hawk:** 12 Jul (1 im) Greene Co (DHM). **Peregrine Falcon:** 2 ad thru season, 19-28 June (2 yg at nestsite, but only 1 yg thereafter, fledging 7 Jul & present thru autumn) railroad trestle below Chickamauga Dam, Hamilton Co (m.ob.); 27 Jul (1) U.T. Plant Science Farm, Knox Co (Brian Holt). **American Coot:** 21 Jun (2) Phipps Bend (RLK).

*Yellowlegs-Woodpecker:* **Lesser Yellowlegs:** 6 Jul (1) New Mkt (KDE), ers. Willet: 18 Jul (6) Bra Lev (Jimmie Caldwell). **Semipalmated Sandpiper:** 5/17 Jun (6/24) Bra Lev (KAC, TLR); 15 Jun (1) New Mkt (KDE); lrs. **Least Sandpiper:** 28 Jun (1) Bra Lev (KAC, Libby Wolfe); 30 Jun (1) New Mkt (KDE); ers. **White-rumped Sandpiper:** 5 Jun (1) Bra Lev (KAC, TLR), lrs. **Short-billed Dowitcher:** 25 Jul (1) Ktn Stm Pl (DJT), ers. **Caspian Tern:** 18 Jul (1) Rkn Bot (KDE). **Black Tern:** 25 Jul (1) Ktn Stm Pl (DJT, KDE). **Eurasian Collared-Dove:** 27 Jul (2) Pikeville, Bledsoe Co (KAC). **Barn Owl:** 19-26 Jun (1) Tusculum College, Greene Co (DHM); 21-31 Jul (1-4) Jefferson Co (KDE). **Red-headed Woodpecker:** reported at 1 site in Jefferson Co (KDE), 2 sites each in Greene Co (DHM) & Wash. Co (RLK); 25 Jul (6 ad) Charleston, Bradley Co (DJT, KDE).

*Flycatcher-Thrush:* **Willow Flycatcher:** 7 Jun (1) Morgan Co (SJS); 7/14 Jun (2) Mohawk, Greene Co (DHM); 16 Jun (1) Conklin, Wash. Co (RLK); 21 Jun (1) Phipps Bend (RLK). **Scissor-tailed Flycatcher:** 10 Jun (1) Charleston, Bradley Co (Carla Christensen, Janice Chadwell). **Loggerhead Shrike:** 19 Jun (pair w/ 2 yg) Jefferson Co (KDE); 14 Jun (pair) Greene Co (DHM). **Warbling Vireo:** 7 Jun (8 at 4 sites) Wash Co (RLK). **Red-eyed Vireo:** 3/4 Jun (65/67) Big South Fork (SJS), on separate 25-stop point counts. **Horned Lark:** 7/16 Jun (1) separate Wash. Co sites (RLK). **Tree Swallow:** 7 Jun (1) near Wartburg, Morgan Co (SJS); 21 Jun (200+) Phipps Bend (RLK). **Bank Swallow:** 4/6 Jun (1-2) near Tusculum, Greene Co (DHM). **Cliff Swallow:** 11 Jun (154 nests) Picken's Bridge, Boone L, Wash./Sullivan Cos; 16 Jun (42 birds at 4 bridges) Nolichucky R, Wash. Co; 21 Jun (72 nests) Ridgefields Bridge, Kingsport (all RLK). **Veery:** 3 Jun (4) Frz Hd (SJS).

*Warbler-Oriole:* **Black-throated Blue Warbler:** 6-7 Jun (3) Frz Hd (SJS). **Blackburnian Warbler:** 3/7 Jun (1) Frz Hd (SJS). **Cerulean Warbler:** 3 Jun (56) Frz Hd (SJS), on 9 mile hike. **American Redstart:** 3 Jun (54) Frz Hd (SJS). **Prothonotary Warbler:** 18 Jul (1 f, 1 yg) Oak Ridge Reservation, Roane Co (Dev Joslin). **Worm-eating Warbler:** 4 Jun (10) Big South Fork (SJS), on 25-stop point count. **Ovenbird:** 3/4 Jun (56/70) Big South Fork (SJS), on separate 25-stop point counts. **Canada Warbler:** 3 Jun (2) Frz Hd (SJS); 16 Jun (1) Greeneville (DHM), late migrant. **Savannah Sparrow:** thru Jun (6 singing m at 4 sites) Wash Co (RLK). **Grasshopper Sparrow:** 2-29 Jun (21 at 10 sites) Greene Co (DHM); 28 Jun (7) Tri-cities Airport, Sullivan Co (RLK). **Rose-breasted Grosbeak:** 3 Jun (2) Frz Hd (SJS). **Dickcissel:** thru

early Jul (2-3 m, 1-2 f) Limestone, Wash. Co (RLK); thru late Jul (1 m) New Mkt (KDE); 21 Jun ( 1 f, nest under construction) Phipps Bend (RLK); 28 Jun (4) Mohawk, Greene Co (DHM). **Bobolink:** 16 Jun - 10 Jul (3 m, 1-2 f, 4 apparent yg) Conklin, Wash. Co (RLK). **Baltimore Oriole:** 7 Jun (m feeding nestlings) Wash. Co (RLK).

*Addendum:* **Common Raven:** 18 Mar 1996 (2) Clinch R., Grainger Co. (Pete Wyatt, Bruce Anderson).

*Corrigenda:* ***Migrant*** 67:23, **Rose-breasted Grosbeak:** number at Lookout Mtn should be 50, not 500.

***Migrant*** 67:33, line 42, where it reads "(missing copy)" should read Pine Siskin.

***Migrant*** 67:64, under Sedge Wren & Marsh Wren - Volunteer Army Ammunition Plant is in Hamilton Co, not Hawkins Co.

***Migrant*** 67:79, beginning in line 16, should read: **Blue Grosbeak:** good numbers in northeast Tenn., 22 Jun (8 m) Wash Co (RLK), max. **Dickcissel:** 24 Jun (nest w/ 4 yg) Lst (RLK, JWC, LCM, Andy Jones), first Wash Co nest & only second for northeast Tenn, up to 12 birds (9 m, 3 f) present thru Jul.

*Locations:* Aus Spr - Austin Springs, Washington Co; Bra Lev - Brainerd Levee, Hamilton Co; Big South Fork - in Scott Co; Frz Hd - Frozen Head State Park, Morgan Co; Ktn Stm Pl - Kingston Steam Plant, Roane Co; New Mkt - New Market, Jefferson Co; Phipps Bend - in Hawkins Co; Rkn Bot - Rankin Bottoms, Cocke Co; Wash. Co - Washington Co.

RICHARD L. KNIGHT, 804 North Hills Drive, Johnson City, TN 37604.

EASTERN MOUNTAIN REGION — Late summer movements of egrets and sandpipers were less than usual. Pine Siskins visited a feeder in Shady Valley all summer. A constant-effort (MAPS) banding project in Sullivan County produced a late spring record for Mourning Warbler.

*Grebe-Cuckoo:* **Pied-billed Grebe:** 13 Jun (1) Watauga L., Carter Co (RLK, Tess Cumbie); 26 Jul (1) Middlebrook L. (JWC); 28 Jul (1) Doe Valley, Johnson Co (JLS). **Great Egret:** 17 Jul (1) Simmerly Creek, Carter Co (Bryan Stevens); 26 Jul (1) Middlebrook L. (JWC). **Little Blue Heron:** 26 Jul (2 im) Middlebrook L. (JWC). **Black-crowned Night-Heron:** 26 Jul (3) Middlebrook L. (JWC). **Hooded Merganser:** 4 -5 Jun (1 f) Shady Valley (JLS). **Osprey:** 26 Jul (1) S Holston L. (JWC). **Bald Eagle:** 25 Jun (1 ad) S Holston L (Joe McGuiness). **Cooper's Hawk:** 7 Jun (1) GSMNP (DJT); 24 Jun (1) Mountain City (RLK); several mid-Jul records in Holston Valley (RPL). **Peregrine Falcon:** 7-8 Jun (3 yg) GSMNP (David Morris, Dick Dickenson), same nest site as last year. **Northern Bobwhite:** 12/14 Jun (1) Shady Valley (JLS). **Lesser Yellowlegs:** 26 Jul (1) S Holston L (JWC), ers. **Least Sandpiper:** 18 Jul (1) S Holston L (JWC), ers. **Mourning Dove:** 12/19 Jun (2) Roan Mtn at 4450 ft elevation (RLK). **Black-billed Cuckoo:** 1 Jun (1) w Carter Co (Martha Dillenbeck).

*Flycatcher-Thrush:* **Alder Flycatcher:** thru Jun (2) Carver's Gap, Roan Mtn (RLK). **Willow Flycatcher:** 11 Jun/17 Jul (1) Shady Valley (JLS); 12 Jun (1-2) Hampton Creek Cove, near Roan Mtn (RLK); 17 Jun (1) Roan Mtn village (RLK); 24 Jun (5) Mountain City area (RLK). **Common Raven:** 27-28 Jun (1) Shady Valley (JLS); in Jul (2 recently fledged yg) near Tellico L., Monroe Co (Nathan Klaus). **Tree Swallow:** now fairly common in Carter/Johnson Co area, with several breeding records. **Cliff Swallow:** 13 Jun (2+) bridge over Watauga R. at town of Watauga, Carter Co (RLK). **Brown Creeper:** 13/17 Jun (1 singing) Walnut Mtn (RLK), near 1997 nest site; thru Jun (2-4) Roan Mtn (RLK). **Winter Wren:** 4 Jun (1) Shady Valley at 2800 ft elev. (JLS); 17 Jun (1) Walnut Mtn at 3000 ft elev. (RLK). **Hermit Thrush:** thru Jun (1-2) Roan Mtn (RLK); 28 Jun (4 singing) Mt. LeConte, GSMNP (Bill Sullivan).

*Warbler-Siskin:* **Golden-winged Warbler:** 6 Jul (1) Flag Pond, Unicoi Co (AJT), few recent records from that area. **"Brewster's" Warbler:** 17 Jun (1 m carrying food) Dark Hollow Rd., near Roan Mtn (RLK). **Magnolia Warbler:** thru Jun (4+) on Unaka Mtn, Unicoi Co (AJT); 15-19 Jun (1 singing m) Roan Mtn (RLK). **Swainson's Warbler:** 15 Jun (2 singing) School House Gap trail, GSMNP (DJT); 17 Jun (1) Walnut Mtn (RLK). **Mourning Warbler:** 2 Jun (1 m banded) Holston Valley (RPL), record late departure by 3 days. **Vesper Sparrow:** 20 Jun/7 Jul (1) Shady Valley (JLS). **Savannah Sparrow:** 17/19 Jun (3/1) Shady Valley (JLS); 24 Jun (2/1) Doe Valley & Mill Creek, Johnson Co (RLK). **Blue Grosbeak:** 14 Jun (1) Shady Valley (JLS); 24 Jun (1) Mill Creek, Johnson Co (RLK); 28 Jun (5) Cades Cove, GSMNP (DJT). **Indigo Bunting:** 12-27 Jun (pair) Carver's Gap, Roan Mtn (RLK), scarce at high elevation. **Brown-headed Cowbird:** 17 Jun (1/2) Rich Gap at 3680 ft & Walnut Mtn at 3500 ft elev., Carter Co (RLK), both near clearcuts; 19 Jun (1) Roan Mtn at 4450 ft elev. (RLK), near feeders; 24 Jul (fledgling fed by pair of *Empidonax* flycatchers, probably Willow Flycatchers based on habitat) near Elizabethton airport, Carter Co (Bryan Stevens). **Red Crossbill:** 12 Jun (pair) Roan Mtn (RLK, Howard Langridge, Buddy Hollis); 29 Jun (10+) GSMNP (DJT), female observed collecting nesting material. **Pine Siskin:** thru 10 Jun (3-6)/thru Jul (1) Shady Valley (JLS), unusual summer record at 2800 ft elev.; thru Jun (4-10) summit of Roan Mtn & (4-6) at feeders at 4450 ft elev. on Roan Mtn (RLK).

*Locations:* GSMNP - Great Smoky Mountains National Park; Holston Valley - in Sullivan Co; Middlebrook L - in Sullivan Co; Mountain City - in Johnson Co; Roan Mtn - in Carter Co; Shady Valley - in Johnson Co; S Holston L - in Sullivan Co; Walnut Mtn - in Carter Co.

RICHARD P. LEWIS, 407 V.I. Ranch Road, Bristol, TN 37620.

OBSERVERS

MLB - Michael L. Bierly
CHB - Carolyn H. Bullock
KAC - Kevin A. Calhoon
HKC - Hazel K. Cassel
PDC - Phillip D. Casteel
LCC - Lula C. Coffey
JWC - J. Wallace Coffey
WGC - W. Glen Criswell
KDE - K. Dean Edwards
FCF - Francis C. Fekel
JAF - James A. Ferguson
SCF - Sue C. Ferguson
RPF - Robert P. Ford
JoF - John Froeschauer
MAG - Mark A. Greene
MaH - Martha Heinemann
RLK - Richard L. Knight
RPL - Richard P. Lewis
MLM - Margaret L. Mann
OKM - O. Knox Martin
SNM - Susan N. McWhirter
DHM - Don H. Miller
GCP - Gaynell C. Perry
DDP - Dick D. Preston
VBR - Virginia B. Reynolds
MR - Michael Roedel
TLR - Tommie L. Rogers
JKS - Jan K. Shaw
JLS - John L. Shumate
SJS - Stephen J. Stedman
VJS - V. Joe Stone
AJT - Allan J. Trently
DJT - David J. Trently
MGW - Martha G. Waldron
JRW - Jeff R. Wilson
TJW - Terry J. Witt
JAZ - John A. Zempel
LVZ - Linda V. Zempel

*The Migrant*, 69 (4): 193-198, 1998.

# SPECIES INDEX TO VOLUME 69, 1998


Accipiter species 4, 20, 21, 35, 149
Anhinga 8, 160
Ani, Groove-billed 10
Avocet, American 9, 46, 121, 187

Bittern
  American 8, 34, 42, 45, 106, 144, 145, 146, 148, 160, 164, 166
  Least 8, 34, 40, 45, 143, 145, 148, 160, 166, 185, 188
Blackbird
  Brewer's 12, 13, 24, 25, 44, 108, 113
  Red-winged 5, 12, 24, 25, 38, 113, 157, 173, 174
  Rusty 12, 16, 18, 24, 25, 44, 109, 163, 165
  Yellow-headed 12, 165
Blackbird species 24, 25
Bluebird, Eastern 11, 16, 22, 23, 36, 69, 71, 81, 85, 89, 90, 91, 92, 94, 95, 96, 101, 103, 153
Bobolink 12, 38, 47, 50, 144, 157, 185, 188, 190
Bobwhite, Northern 4, 5, 9, 22, 23, 35, 49, 150, 173, 190
Brant 4, 8, 13, 15, 20, 21
Bufflehead 4, 8, 17, 20, 21, 48, 111, 112, 144, 149
Bunting
  Indigo 12, 37, 44, 47, 156, 168, 173, 175, 191
  Lark 12
  Painted 12, 33, 37, 143, 147, 156, 163, 187
  Snow 12, 13, 19, 24, 25, 106, 107
Buteo species 4, 20, 21, 149

Canvasback 4, 8, 20, 21, 42, 48, 144, 149
Cardinal, Northern 12, 24, 25, 37, 155, 163
Catbird, Gray 11, 15, 17, 18, 19, 22, 23, 36, 47, 50, 106, 107, 111, 153
Catharus species 36, 153
Chat, Yellow-breasted 11, 37, 155
Chickadee
  Black-capped 11, 16, 33, 70, 90, 92, 100, 101, 102, 104
Carolina 11, 15, 22, 23, 36, 49, 69, 70, 71, 76, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 152, 163
Chuck-will's-widow 10, 35, 147, 151
Coot, American 4, 9, 14, 22, 23, 35, 43, 46, 49, 150, 187, 189
Cormorant
  Double-crested 4, 8, 13, 17, 20, 21, 34, 42, 45, 48, 106, 110, 148, 160, 163, 166, 169, 186, 188
  Neotropic 8
Cowbird
  Brown-headed 4, 12, 18, 24, 25, 38, 84, 157, 173, 191
  Shiny 12
Crane, Sandhill 4, 9, 17, 22, 23, 40, 43, 46, 49, 106, 107, 109, 111, 164
Creeper, Brown 11, 16, 22, 23, 36, 43, 144, 147, 153, 162, 187, 191
Crossbill
  Red 12, 13, 19, 24, 25, 50, 113, 169, 185, 191
  White-winged 12, 13, 18, 24, 25, 105, 108, 110
Crow
  American 10, 18, 22, 23, 36, 107, 127, 129, 152, 180
  Fish 10, 13, 17, 22, 23, 33, 107, 162
Cuckoo
  Black-billed 10, 35, 41, 143, 145, 147, 151, 164, 167, 169, 190
  Yellow-billed 10, 35, 151
Curlew, Long-billed 9

Dickcissel 12, 37, 144, 156, 165, 168, 190
Dove
  Eurasian Collared 10, 13, 14, 22, 23, 33, 35, 39, 40, 41, 46, 111, 143, 145, 151, 187, 188, 189
  Mourning 10, 18, 22, 23, 35, 49, 151, 190
  Rock 10, 22, 23, 35, 151
  *Streptopelia* species 160, 162
  White-winged 159, 160, 162
Dowitcher
  Long-billed 9, 41, 162, 164
  Short-billed 9, 41, 46, 49, 161, 167, 189
Dowitcher species 41, 46, 162
Duck
  American Black 4, 8, 20, 21, 45, 110, 146, 148, 160, 186
  Harlequin 8
  Masked 8
  Ring-necked 4, 8, 20, 21, 35, 42, 45, 110, 112, 147, 149
  Ruddy 4, 8, 16, 20, 21, 42, 45, 48, 109, 111, 164
  Wood 4, 8, 20, 21, 34, 112, 148
Duck species 4, 20, 21
Dunlin 4, 9, 13, 22, 23, 35, 41, 46, 49, 107, 111, 146, 150, 167

Eagle
  Bald 4, 8, 13, 15, 19, 20, 21, 28, 35, 40, 42, 45, 48, 107, 109, 111, 113, 124, 134, 143, 144, 145, 146, 149, 161, 164, 166, 169, 186, 189, 190
  Golden 9, 45, 111, 161
Egret
  Cattle 8, 34, 45, 146, 148, 164, 186, 188
  Great 4, 8, 13, 17, 20, 21, 34, 40, 42, 45, 48, 106, 110, 144, 146, 147, 148, 166, 186, 187, 188, 190
  Reddish 8, 39, 42
  Snowy 8, 34, 42, 146, 148, 164, 166, 169, 186, 188
Eider, King 8
*Empidonax* species 13, 18, 22, 23, 36, 145, 152, 191

Falcon
Peregrine 4, 9, 16, 18, 20, 21, 35, 40, 45, 46, 49, 107, 109, 111, 124, 145, 149, 159, 161, 164, 166, 168, 169, 179, 180, 181, 185, 186, 188, 189, 190
Prairie 4, 9, 13, 19, 20, 21, 42, 43, 105, 107
Finch
House 12, 24, 25, 38, 50, 157, 173
Purple 12, 13, 16, 19, 24, 25, 38, 41, 44, 47, 50, 106, 108, 112, 113, 143, 144, 145, 157, 165, 168, 169
Flicker, Northern 10, 22, 23, 36, 152
Flycatcher
Acadian 10, 36, 152, 167
Alder 10, 191
Ash-throated 10
*Empidonax* species 13, 18, 22, 23, 36, 145, 152, 191
Great Crested 10, 13, 14, 22, 23, 36, 39, 47, 49, 86, 152
Least 10, 36, 43, 143, 146, 147, 152, 162, 164
Olive-sided 10, 36, 39, 41, 43, 47, 49, 143, 145, 147, 152, 162, 167
Scissor-tailed 10, 160, 162, 164, 166, 167, 189
Variegated 10
Vermilion 10, 40, 41
Willow 10, 33, 162, 167, 189, 191
Yellow-bellied 10, 43, 49, 162, 167
Frigatebird, Magnificent 8

Gadwall 4, 8, 20, 21, 35, 42, 45, 110, 112, 144, 145, 147, 148, 160, 166, 186
Gallinule, Purple 9, 166
Gannet, Northern 8
Garganey 8
Gnatcatcher, Blue-gray 11, 36, 153, 165
Godwit
Hudsonian 9
Marbled 9, 40, 46, 160, 161
Golden-Plover, American 9, 46, 48, 49, 161
Goldeneye
Barrow's 8
Common 4, 8, 13, 17, 20, 21, 42, 111, 112
Goldfinch, American 12, 24, 25, 38, 157
Goose
Brewer's 14
Canada 4, 8–12, 15, 20, 21, 34, 127, 148
Greater White-fronted 4, 8, 20, 21, 106, 109, 110, 166
Ross's 8, 105, 106, 110, 160
Snow 4, 8, 14, 18, 20, 21, 34, 42, 48, 110, 148, 160
Goshawk, Northern 9, 44, 45
Grackle, Common 12, 24, 25, 38, 157, 173
Grebe
Clark's 8
Eared 4, 8, 13, 20, 21, 39, 40, 48, 112, 169
Horned 4, 8, 20, 21, 34, 40, 42, 45, 48, 106, 108, 110, 112, 143, 144, 146, 148, 160, 163
Pied-billed 4, 8, 20, 21, 34, 42, 45, 148, 169, 186, 187, 188, 190
Red-necked 4, 8, 13, 19, 20, 21, 39, 42, 48
Western 8
Grosbeak
Black-headed 12, 40, 41
Blue 12, 37, 156, 190, 191
Evening 12, 13, 16, 24, 25, 42, 44, 48, 50, 108, 110, 112, 113, 143, 144, 146, 157, 168, 169
Pine 12
Rose-breasted 12, 37, 44, 156, 190
Ground-Dove, Common 10
Grouse, Ruffed 4, 9, 20, 21, 33, 35, 146, 149
Gull
Black-headed 9
Bonaparte's 4, 9, 22, 23, 35, 43, 46, 49, 111, 151, 164, 169
California 9
Franklin's 9, 162, 186
Glaucous 9, 109
Great Black-backed 10
Herring 4, 9, 22, 23, 43, 109, 111
Iceland 9, 159, 160, 162
Ivory 10
Laughing 9, 162, 186
Lesser Black-backed 9
Little 9
Ring-billed 4, 9, 22, 23, 35, 43, 109, 111, 151, 164
Sabine's 10
Gyrfalcon 9

Harrier, Northern 4, 9, 18, 20, 21, 45, 49, 111, 144, 145, 149, 167, 169, 187
Hawk
Broad-winged 4, 9, 13, 14, 20, 21, 35, 45, 49, 149, 164, 166, 169
Cooper's 4, 9, 20, 21, 35, 40, 45, 107, 109, 149, 164, 166, 167, 185, 186, 187, 189, 190
"Harlan's" Red-tailed 43
Red-necked 106
Red-shouldered 4, 9, 20, 21, 35, 45, 49, 113, 149, 166, 169, 189
Red-tailed 4, 9, 20, 21, 35, 45, 107, 127, 128, 129, 149, 166
Rough-legged 4, 9, 16, 20, 21, 110, 111, 143, 144, 149
Sharp-shinned 4, 9, 20, 21, 35, 40, 45, 107, 149, 166, 167, 187, 189
Swainson's 4, 9, 13, 17, 20, 21, 159, 160, 161, 166

Heron
Great Blue 4, 5, 8, 20, 21, 34, 108, 110, 148, 164, 166, 176, 177, 178, 186
Green 8, 34, 148, 164, 169, 187
Green-backed 5
Little Blue 8, 34, 42, 45, 144, 145, 146, 148, 166, 186, 188, 190
Tricolored 8, 42, 160, 186
Hummingbird
Allen's 1, 2, 10, 13, 22, 23, 46, 111, 125, 126
Anna's 1, 10
Black-chinned 1, 2, 10, 13, 18, 22, 23, 42, 43, 46, 109, 125
Calliope 1, 10, 13, 16, 22, 23, 39, 42, 43, 105, 108, 109, 125, 159, 163, 164
Ruby-throated 1, 2, 10, 13, 18, 22, 23, 36, 43, 46, 49, 109, 151, 164
Rufous 1, 2, 10, 43, 109

Ibis
Glossy 8, 45, 143, 146, 148, 160, 166
*Plegadis* species 166
White 8, 39, 40, 42, 45, 186, 187, 188
White-faced 8

Jaeger
Long-tailed 9
Parasitic 9
Pomarine 9
Jay, Blue 10, 22, 23, 36, 47, 152, 167
Junco, Dark-eyed 12, 24, 25, 38, 39, 41, 44, 109, 146, 156, 173, 175

Kestrel, American 4, 9, 20, 21, 35, 45, 149, 167
Killdeer 4, 5, 9, 22, 23, 35, 39, 40, 46, 121, 150
Kingbird
Eastern 10, 36, 43, 47, 49, 152
Western 10, 40, 41, 162
Kingfisher, Belted 5, 10, 22, 23, 36, 151
Kinglet
Golden-crowned 11, 15, 22, 23, 36, 49, 113, 153
Ruby-crowned 11, 22, 23, 36, 47, 113, 153, 167
Kite
Mississippi 8, 35, 40, 147, 149, 161, 185, 186, 187
Swallow-tailed 8
White-tailed 8, 42
Kittiwake, Black-legged 10
Knot, Red 9

Lark, Horned 10, 16, 22, 23, 36, 43, 47, 111, 152, 167, 189
Limpkin 9
Longspur
Lapland 12, 13, 15, 19, 24, 25, 41, 107
Smith's 12
Loon
Common 4, 8, 14, 15, 17, 20, 21, 34, 42, 45, 108, 110, 148, 166
Pacific 8, 160
Red-throated 4, 8, 13, 15, 20, 21, 45, 105, 110, 112
Yellow-billed 8

Mallard 4, 8, 20, 21, 34, 148
Martin, Purple 11, 36, 152, 164
Meadowlark
Eastern 5, 12, 15, 24, 25, 38, 50, 157, 175
Western 12, 107
Meadowlark species 173
Merganser
Common 4, 8, 17, 20, 21, 40, 106, 169
Hooded 4, 8, 20, 21, 45, 48, 109, 111, 145, 149, 189, 190
Red-breasted 4, 8, 20, 21, 35, 40, 106, 111, 144, 145, 147, 149, 164, 166, 169
Merlin 4, 9, 16, 19, 20, 21, 33, 35, 45, 49, 107, 145, 146, 149, 166
Mockingbird, Northern 11, 15, 24, 25, 36, 153
Moorhen, Common 9, 46, 166, 186

Night-Heron
Black-crowned 4, 8, 16, 20, 21, 34, 40, 45, 48, 108, 110, 148, 160, 166, 186, 188, 190
Yellow-crowned 8, 34, 40, 48, 145, 146, 147, 148, 164, 166, 169, 186, 187
Night-Heron species 4, 20, 21
Nighthawk, Common 10, 35, 41, 43, 46, 107, 111, 146, 151, 186, 188
Nuthatch
Brown-headed 11, 22, 23, 36, 47, 107, 111, 143, 145, 153
Red-breasted 11, 13, 16, 19, 22, 23, 36, 39, 41, 42, 43, 44, 47, 49, 105, 108, 109, 111, 113, 143, 144, 153, 167
White-breasted 11, 15, 22, 23, 36, 49, 153

Oldsquaw 4, 8, 13, 20, 21, 106, 111
Oriole
Baltimore 12, 38, 44, 188, 190
Bullock's 12
Northern 157
Orchard 12, 38, 157, 169
Osprey 8, 35, 40, 42, 45, 48, 111, 149, 161, 164, 166, 169, 186, 189, 190
Ovenbird 11, 37, 155, 187, 189

Owl
Barn 10, 15, 22, 23, 33, 43, 46, 49, 107, 143, 144, 151, 162, 171, 172, 174, 175, 185, 186, 187, 188, 189
Barred 10, 22, 23, 35, 146, 151
Eastern Screech 10, 15, 22, 23, 35, 151
Great Horned 10, 22, 23, 35, 109, 113, 151, 174
Long-eared 10
Northern Saw-whet 10
Short-eared 10, 19, 22, 23, 107, 111, 162, 182, 183, 184
Snowy 10

Parakeet, Carolina 10
Parula, Northern 11, 154, 188
Pelican
American White 8, 40, 42, 106, 134, 160, 186
Brown 8
Phalarope
Red 9, 105, 110, 111, 131, 132, 133
Red-necked 9, 40, 41
Wilson's 9, 41, 46, 143, 151, 162, 167, 186, 187
Phoebe
Eastern 10, 22, 23, 36, 152
Say's 10
Pigeon
Band-tailed 10
Passenger 10
Pintail, Northern 4, 8, 14, 20, 21, 110, 186
Pipit
American 11, 18, 24, 25, 41, 47, 50, 107, 113, 143, 146, 153, 162, 168
Sprague's 11
*Plegadis* species 166
Plover
Black-bellied 9, 43, 48, 49, 167
Piping 9, 40, 186
Semipalmated 9, 35, 46, 146, 150, 167
Snowy 9
Wilson's 9
Prairie-Chicken, Greater 9

Rail
Black 9
Clapper 9
King 9, 33, 40, 143, 150, 185, 186
Virginia 4, 5, 9, 13, 14, 22, 23, 35, 40, 43, 143, 146, 150, 159, 161, 166, 186
Yellow 9, 42, 43
Raven, Common 10, 22, 23, 33, 47, 126, 128, 129, 130, 152, 169, 179, 180, 181, 190, 191
Redhead 4, 8, 14, 15, 18, 20, 21, 42, 109, 110, 112
Redpoll, Common 12
Redstart, American 11, 37, 155, 163, 168, 188, 189
Robin, American 11, 22, 23, 27, 36, 113, 153, 167
Ruff 9

Sanderling 9, 43, 121, 186
Sandpiper
Baird's 9, 35, 40, 46, 143, 150, 161
Buff-breasted 9, 41, 46
Curlew 9
Least 4, 9, 22, 23, 35, 40, 46, 107, 109, 111, 119, 121, 150, 167, 189, 190
Pectoral 9, 35, 39, 40, 46, 49, 119, 121, 146, 150, 161, 187
Purple 9
Semipalmated 9, 35, 46, 119, 121, 122, 145, 146, 150, 164, 167, 187, 189
Sharp-tailed 9
Solitary 9, 35, 49, 150, 187
Spotted 4, 9, 13, 18, 22, 23, 35, 46, 107, 150, 187
Stilt 9, 35, 43, 46
Upland 9, 40, 46, 150
Western 9, 35, 40, 46, 150, 186
White-rumped 9, 35, 40, 150, 186, 189
Sapsucker, Yellow-bellied 10, 22, 23, 36, 46, 144, 145, 146, 151, 164, 167
Scaup
Greater 4, 8, 16, 17, 19, 20, 21, 42, 48, 106, 109, 110, 112, 161, 169
Lesser 4, 8, 20, 21, 35, 48, 111, 144, 149
Scaup species 4, 20, 21
Scoter
Black 4, 8, 13, 14, 20, 21, 111, 166
Surf 8, 42, 45, 48
White-winged 8, 42
Shoveler, Northern 4, 20, 21, 34, 45, 112, 144, 146, 148, 159, 160, 186
Shrike
Loggerhead 10, 15, 16, 17, 24, 25, 33, 36, 111, 144, 146, 147, 154, 168, 189
Northern 10
Siskin, Pine 12, 13, 14, 16, 17, 24, 25, 38, 39, 42, 44, 47, 50, 106, 108, 110, 112, 113, 143, 144, 145, 157, 163, 165, 168, 169, 185, 190, 191
Skimmer, Black 10
Snipe, Common 4, 9, 22, 23, 35, 43, 46, 49, 111, 113, 150, 162
Sora 9, 35, 40, 43, 46, 111, 144, 146, 150, 161, 164, 166, 169, 173
Sparrow
American Tree 12, 24, 25, 39, 44, 50, 107, 109, 110, 112, 143, 144, 156
Bachman's 12, 143, 145, 156, 165
Chipping 12, 16, 24, 25, 37, 47, 112, 156
Clay-colored 12
Eurasian Tree 126
European Tree 135
Field 12, 24, 25, 37, 50, 156, 173
Fox 12, 13, 24, 25, 113, 143, 144, 156
Grasshopper 12, 37, 47, 156, 163, 165, 169, 187, 189
Harris' 12

Henslow's 12, 33, 37, 44, 47, 143, 145, 147, 156, 159, 163, 165, 185, 187, 188
House 12, 24, 25, 38, 69, 79, 86, 89, 91, 95, 97, 157
Lark 12, 33, 143, 146, 156, 185, 187, 188
LeConte's 12, 19, 24, 25, 41, 47, 107, 109, 163
Lincoln's 15, 18, 19, 24, 25, 37, 44, 47, 50, 145, 146, 147, 156, 165, 168
Nelson's Sharp-tailed 12, 47, 165
Savannah 12, 24, 25, 37, 156, 185, 189, 191
Song 12, 24, 25, 37, 156, 173, 187
Swamp 12, 13, 24, 25, 37, 50, 156, 173
Vesper 12, 14, 24, 25, 37, 44, 47, 50, 109, 143, 144, 156, 165, 185, 191
White-crowned 12, 16, 24, 25, 37, 44, 109, 156
White-throated 12, 24, 25, 37, 130, 131, 156
Sparrow species 24, 25, 37
Spoonbill, Roseate 8
Starling, European 11, 24, 25, 36, 86, 154, 173
Stilt
Black-necked 9, 35, 40, 121, 122, 143, 150, 161, 186
Red-necked 9
Upland 143, 144, 167
Western 145, 161, 169
White-rumped 120, 146, 161, 164, 167
Stork, Wood 8
Storm-Petrel
Band-rumped 8
*Streptopelia* species 160, 162
Swallow
Bank 11, 36, 41, 145, 152, 162, 187, 189
Barn 11, 152, 169, 173
Cliff 11, 36, 152, 162, 189, 191
Northern Rough-winged 11, 36, 41, 47, 152, 164
Tree 11, 18, 36, 43, 47, 105, 109, 111, 113, 152, 162, 164, 167, 189, 191
Violet-green 11
Swallow species 18, 22, 23, 36, 152
Swan
Mute 4, 8, 13, 17, 20, 21, 106
Trumpeter 8
Tundra 8, 40, 109, 110
Swift, Chimney 10, 36, 46, 116, 151, 164

Tanager
Scarlet 12, 37, 47, 155, 165, 168, 187
Summer 12, 37, 155, 169
Western 12
Tanager species 155
Teal
Blue-winged 4, 8, 20, 21, 34, 42, 45, 48, 148, 164, 166, 188
Cinnamon 8, 160
Green-winged 4, 8, 20, 21, 48, 110, 112
Tern
Arctic 10
Black 10, 35, 43, 46, 49, 143, 146, 151, 187, 189
Caspian 10, 35, 43, 46, 49, 146, 147, 151, 167, 187, 189
Common 10, 35, 43, 49, 143, 144, 151
Forster's 10, 13, 14, 22, 23, 35, 46, 49, 146, 151, 162, 164, 167, 186
Least 10, 33
Royal 10
Sooty 10
Thrasher, Brown 11, 16, 24, 25, 36, 153
Thrush
Bicknell's 33, 36, 143, 147, 153
Gray-cheeked 11, 33, 36, 49, 143, 144, 146, 147, 153
Hermit 11, 22, 23, 49, 143, 144, 153, 185, 191
Swainson's 11, 36, 49, 153, 167, 169
Varied 11
Wood 11, 36, 134, 153, 167
Tit
Blue 101, 102
Great 96, 102, 103
Willow 89
Titmouse, Tufted 11, 22, 23, 36, 49, 70, 86, 91, 92, 95, 104
Towhee
Eastern 12, 24, 25, 37, 156
Green-tailed 12
Spotted 12
Tropicbird, White-tailed 126, 135
Turkey, Wild 4, 9, 16, 18, 22, 23, 35, 43, 46, 150
Turnstone, Ruddy 9, 40, 48, 49, 161, 186

Veery 11, 36, 145, 153, 165, 188, 189
Vireo
Bell's 10
Blue-headed 10, 13, 14, 16, 17, 24, 25, 36, 41, 43, 47, 50, 109, 112, 113, 154, 169
Philadelphia 10, 37, 41, 43, 47, 50, 143, 146, 154
Red-eyed 10, 37, 47, 154, 163, 168, 189
Warbling 10, 36, 47, 145, 154, 188, 189
White-eyed 10, 13, 14, 15, 18, 24, 25, 36, 43, 112, 113, 154
Yellow-throated 10, 36, 43, 154
Vireo species 37
Vulture
Black 4, 8, 20, 21, 35, 45, 107, 111, 149, 166
Turkey 4, 8, 20, 21, 35, 45, 107, 127, 129, 149, 166
Vulture species 149

Warbler
Bay-breasted 11, 37, 47, 155
Black-and-white 11, 13, 17, 24, 25, 37, 112, 155, 165, 168
Black-throated Blue 11, 37, 44, 47, 143, 146, 154, 165, 168, 189
Black-throated Gray 11
Black-throated Green 3, 11, 37, 154, 168
Blackburnian 11, 37, 47, 154, 189
Blackpoll 11, 37, 47, 50, 155, 165, 169
Blue-winged 11, 37, 43, 47, 50, 154, 168, 169
Brewster's 40, 41, 44, 191
Canada 11, 37, 143, 145, 146, 155, 168, 189
Cape May 11, 37, 44, 154, 162, 165, 169
Cerulean 11, 33, 37, 44, 155, 159, 162, 163, 165, 168, 189
Chestnut-sided 11, 37, 154, 188
Connecticut 11, 143, 146, 155, 163, 165, 168
Golden-winged 11, 37, 44, 47, 50, 143, 145, 154, 165, 168, 191
Hooded 11, 37, 44, 155
Kentucky 11, 37, 50, 155, 168
Kirtland's 11
Lawrence's 44
Magnolia 11, 37, 44, 154, 168, 169, 191
Mourning 11, 37, 41, 44, 47, 143, 146, 155, 165, 168, 188, 190, 191
Nashville 11, 37, 44, 50, 154
Orange-crowned 11, 13, 14, 15, 16, 19, 24, 25, 44, 47, 50, 107, 109, 112, 143, 146, 154, 165, 168
Palm 11, 13, 14, 15, 19, 24, 25, 37, 44, 47, 50, 107, 109, 112, 145, 155, 165, 188
Pine 11, 15, 16, 19, 24, 25, 37, 112, 155
Prairie 11, 37, 155, 165
Prothonotary 11, 37, 70, 86, 95, 104, 155, 165, 168, 189
Swainson's 11, 33, 37, 44, 143, 144, 147, 155, 162, 168, 191
Tennessee 11, 37, 47, 50, 154
Townsend's 11
Wilson's 11, 37, 47, 50, 143, 145, 146, 155, 168
Worm-eating 11, 37, 155, 189
Yellow 11, 37, 154
Yellow-rumped 11, 15, 24, 25, 37, 50, 154, 165
Yellow-throated 11, 37, 47, 155, 165
Warbler species 37
Waterthrush
Louisiana 11, 37, 47, 155, 163, 165
Northern 11, 37, 50, 155
Waterthrush species 173
Waxwing, Cedar 11, 24, 25, 36, 43, 109, 113, 154, 165, 185, 187
Whimbrel 9
Whip-poor-will 10, 35, 117, 151, 164, 167
Whistling-Duck
Black-bellied 8
Fulvous 8, 160
Wigeon
American 4, 8, 20, 21, 35, 110, 112, 146, 149, 160, 186
Eurasian 8, 160
Willet 9, 35, 40, 143, 145, 150, 167
Wood-Pewee, Eastern 10, 36, 49, 152
Woodcock, American 4, 9, 17, 22, 23, 35, 43, 46, 49, 107, 109, 147, 151, 164, 167
Woodpecker
Downy 10, 22, 23, 36, 91, 151
Hairy 10, 22, 23, 36, 152
Pileated 10, 22, 23, 36, 152
Red-bellied 10, 22, 23, 36, 49, 102, 151
Red-cockaded 10
Red-headed 10, 17, 19, 22, 23, 36, 43, 46, 49, 144, 151, 162, 189
Wren
Bewick's 11, 33, 36, 41, 109, 143, 146, 147, 153, 162, 164, 185, 187, 188
Carolina 11, 22, 23, 36, 49, 86, 153
House 11, 15, 16, 19, 22, 23, 36, 107, 111, 113, 153, 162, 187
Marsh 11, 14, 17, 19, 22, 23, 36, 43, 47, 107, 111, 144, 145, 146, 153, 162, 167, 190
Rock 11
Sedge 11, 14, 19, 22, 23, 36, 41, 43, 107, 109, 143, 145, 146, 153, 162, 164, 167, 190
Winter 11, 22, 23, 36, 43, 47, 49, 109, 144, 153, 164, 191

Yellowlegs
Greater 9, 35, 43, 46, 49, 111, 150, 161, 164, 167, 187
Lesser 4, 9, 13, 22, 23, 35, 46, 106, 107, 150, 161, 164, 167, 187, 189, 190
Yellowthroat, Common 11, 37, 47, 155, 165

# INSTRUCTIONS TO AUTHORS

*The Migrant* records observations and studies of birds in Tennessee and adjacent areas.

SUBMISSIONS: The original and two copies of the manuscript should be sent to the Editor: J.D. Joslin, 112 Newcrest Lane, Oak Ridge, TN 37830. Manuscripts that have been published in other journals should not be submitted. Electronic copies on disk or sent by e-mail to <jdjoslin@esper.com> are greatly appreciated.

MATERIAL: The subject matter should relate to some phase of Tennessee ornithology. It should be original, factual, concise, and scientifically accurate.

STYLE: Both articles and short notes are solicited; recent issues of *The Migrant* should be used as a guide in the preparation of manuscripts. Where more detail is needed, reference should be made to the *CBE Style Manual;* this book is available at many public libraries and from the Council of Biology Editors, Inc., 111 East Wacker Drive, Suite 3200, Chicago, IL 60601-4298.

COPY: Manuscripts should be typed *double-spaced* on 8.5 x 11" paper with adequate margins for editorial notations. Tables and figures should be prepared on separate sheets with appropriate headings; see *CBE Style Manual* for examples of appropriate form for tables. Photographs intended for reproduction should be sharp with good contrast on glossy white paper; black-and-white photographs will usually reproduce better than color photographs. Weights, measurements, and distances should be in metric units. Dates should be in "continental" form (e.g., 16 March 1997). Use the 24-hour clock (e.g., 0500 or 1900).

NOMENCLATURE: The scientific name of a species should be given after the first use of the full common name in the text. The scientific name should be underlined and in parentheses. Names should follow the *A.O.U. Check-list of North American Birds* (seventh edition, 1998, or supplements).

TITLE: The title should be concise, specific, and descriptive.

ABSTRACT: Manuscripts of five or more typed pages should include an abstract. The abstract should be less then 5% of the length of the manuscript. It should include a brief explanation of why the research was done, the major results, and why the results are important.

LITERATURE CITED: List all literature citations in a "Literature Cited" section at the end of the text. Text citations should include the author and year.

IDENTIFICATION: Manuscripts including reports of rare or unusual species or of species at atypical times should include: date and time, light and weather conditions, exact location, habitat, optical equipment, distance, behavior of bird, comparison with other similar species, characteristic markings, experience of observer, other observers verifying the identification, and reference works consulted.

REPRINTS: Reprints are available to authors on request. Billing to authors will be through the TOS Treasurer. Request for reprints must be made well in advance of printing.

SEASON REPORTS: Observations that are to be considered for publication in "The Season" section should be mailed to the appropriate Regional Compiler. Consult a recent issue of *The Migrant* for the name and address of the compiler.

CONTENTS

NOTES ON THE FOOD HABITS OF THE BARN OWL IN MIDDLE AND WEST TENNESSEE
Paul W. Parmalee . . . . . 171

GREAT BLUE HERON COLONY STATUS AND NEST SITE CHARACTERISTICS AT SINKING POND, TENNESSEE
Brian D. Carver, John W. Lamb, Laura Jennings, Ryland Moore & Geoff West . . . . . 176

OBSERVATIONS ON THE RELATIONSHIP BETWEEN THE COMMON RAVEN AND THE PEREGRINE FALCON
Allan J. Trently . . . . . 179

AN ANALYSIS OF SHORT-EARED OWL SIGHTINGS IN TENNESSEE
Anna L. Charbonnet . . . . . 182

THE SEASON: SUMMER: 1 JUNE - 31 JULY 1998
Richard L. Knight, Editor. . . . . 185

SPECIES INDEX TO VOL. 69, 1998 . . . . . 193